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THE CANADIAN TRUCKING INDUSTRY (1)

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I - Abstract

This paper describes the size and structure of the Canadian Trucking Industry, both for-hire and private (or own account). The study highlights and analyses the commonalities and differences between these two segments of the same industry. Size and importance of trucking are illustrated within a national economic framework as well as within a transportation framework.

II - Introduction, Objectives, Definitions, Data Sources and Limitations

Introduction

The successful completion of the Private Trucking Survey (1982) by Statistics Canada provides an opportunity, the first since 1964, to analyse the size and structure of the Canadian trucking

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(1) The opinion expressed in this paper are those of the authors and do not necessarily reflect those of Statistics Canada.

industry, the industry being defined as the sum of owners/operators of trucks, tractors and trailers who use their vehicles for the transportation of goods, either their own (private) or of others (for-hire).

This definition shows the progress made in the collection of statistics describing the activity and nature of trucking as, until recently, the conventional, and sometimes the official, definition of the trucking industry related only to that portion of the total which was involved in the transportation of goods for compensation (i.e., the for-hire segment only).

Study Objectives

The objective of this paper is to present an empirical analysis of the structure, size and importance of the Canadian trucking industry with special reference to the relative importance and competitive nature of private versus for-hire trucking in the long distance commodity transport market.

Definitions

a) The trucking industry for the purpose of this study is defined as the sum of all owners/operators of trucks, tractors and trailers engaged in the transportation of goods or freight regardless of whether compensation is received for such services;

b) The for-hire segment of the industry is defined as owners/operators of vehicles who carry freight for compensation;

c) The private segment of the industry consists of owners/operators of vehicles who carry their own freight. Its principal function is to provide logistical - support service to its proprietary shipper. This definition does not, however, preclude the possibility of a private carrier receiving revenue and generating profit from the transport operations.

Data Sources

The principal data sources of this study are (a) the Motor Carriers of Freight and Household Goods Survey of Statistics Canada; (b) the Trucking Activity Survey of Statistics Canada; (c) the Truck Inventory and Use Survey of Statistics Canada and (d) the For-hire Trucking Survey of Statistics Canada. As the concepts and methodology of these surveys vary significantly, the authors used a number of assumptions and prepared estimates when necessary in order to arrive at comparable data. These estimates were based on the analysis of raw micro data as well as on the professional opinion of the authors.

Data Limitations

Limitations of the data sources which may have important impact on the findings of the study are summarized below:

(1) The private trucking questionnaires were sent to each location or address of the operator where there were more than 14 vehicles registered. This meant that activities of large firms were undercounted as some locations of the same firm, where there were less than 15 vehicles, were not part of the survey.

(2) Private trucking estimates for the Province of British Columbia are underestimated due to a technical problem encountered during universe creation.

(3) Private trucking figures are underestimating the true activities of this industry as private carriers using exclusively leased vehicles were not part of the survey universe.

(4) Vehicle kilometres travelled exclude those travelled by broker operators. As for-hire carriers use brokers more extensively than private carriers and since the number of vehicle kilometres performed by brokers is higher than those

of company owned vehicles, it is felt that the average vehicle kilometres as presented are underestimating the true value for the for-hire carriers more than that for the private carriers.

(5) For many private truckers, some of the cost items relating to trucking were not segregated from other costs. Therefore the total cost of operating private trucking fleets is underestimated.

III - Trucking, A General Overview

The growth of the Canadian trucking industry during the last thirty years has been one of the most important developments in Canadian transportation. The phenomenal growth of the industry can be attributed to a number of factors. The most important are: (a) the development of manufacturing industries, (b) technological improvements, (c) urbanization (d) development of better road systems and (d) the decentralization of certain industries. These factors, in conjunction with the flexibility, speed and adaptability of the motor vehicle has resulted in an increase of the industry's estimated share of the gross domestic product (GDP) from an estimated 1.7% in 1950 to 2.7% in 1983. The increasing share of the trucking industry within the transportation sector is illustrated by using gross operating expenses as a statistical yardstick. These data are presented in Table 1.

TABLE 1

GROSS OPERATING EXPENSES, BY MODE OF TRANSPORT
(FREIGHT TRANSPORT ONLY)

Modes of Transport (Industries)

	Truck(1) Exp. ($bill.)	%	Rail Exp. ($bill.)	%	Water Exp. ($bill.)	%	Other(2) Exp. ($bill.)	%	Total Exp. ($bill.)	%
1950	0.1	9	0.8	66	0.1	9	0.2	16	1.2	100
1960	1.5	43	1.0	29	0.3	8	0.7	20	3.5	100
1970	3.8	58	1.4	21	0.4	6	1.0	15	6.6	100
1980	11.5	60	4.0	21	1.1	5	2.7	14	19.3	100
1982	14.5	58	5.2	21	1.1	4	4.3	17	25.1	100

(1) Firms with a fleet size of less than 5 vehicles were excluded.

(2) Includes pipelines, freight forwarders, courriers, etc.

Data presented in this Table clearly indicate that, in terms of operating expenses, trucking has become the dominant mode of freight transport, to such an extent that, by 1982, its share represented 58% of the total operating expenses of the industry. Attempts to provide intermodal comparisons using more conventional transportation-related output measures such as tonnes of freight transported or tonne-kilometres of freight carried have not succeeded due to data limitations.

IV - Private Trucking versus For Hire Trucking

In spite of the size and importance of the Canadian trucking industry, it is a virtually an unknown entity, unknown mainly because of the scarcity of data. For example, it is only recently that Transportation Division of Statistics Canada was in a position to collect and make available data on private trucking. In this section, an attempt will be made to describe, very briefly, the size and structure, commonalities and differences of the for-hire and private trucking industries.

Private trucking implies that the transportation of goods is performed privately or own-account; that, is the carrier of freight has some, often a direct interest, in the freight carried. However, in order to develop a working definition, other factors such as operating control, risk of transportation and whether the transportation is taking place within a single business entity also had to be taken into consideration. Recent discussions on "intercorporate hauling", "private carrier subsidiary" and "contract carrier subsidiary" have made the development of a working definition even more difficult. After having considered the legal, regulatory and statistical constraints, the authors have defined private trucking in reference to two major criteria, namely:

(1) it is essentially a proprietorial operation of the principal shipper;

(2) its principal function is to provide a logistical support service, revenue and/or profit having secondary importance.

For-hire trucking on the other hand is defined as the sum of carriers who carry freight for compensation, either for the general public (common carriers) or for a selected group of shippers (contract carriers). For-hire carriers using this definition may or may not be regulated.

Unfortunately, the data base used by the authors did not provide all the necessary information to make a clear-cut distinction between the two. It is recognized that some of the contract for-hire carriers, as defined and tabulated, are carrying the products of their principal shippers only and also that some of the private carriers are in the business principally for the profit, and thus may be considered as for-hire carriers. Examination of the data base has indicated the isolated existence of these, however, they are not significant enough to introduce major statistical biases, or distort the results of the analysis. As a matter of fact, the existence of this problem further supports the definition of industry as proposed by the authors.

In order to describe the two often competing segments of the trucking industry, Table 2 is presented.

TABLE 2

A COMPARISON OF PRIVATE TRUCKING AND FOR HIRE TRUCKING 1982[1]

	For-hire Trucking	%	Private Trucking[2] (Estimated)	%	Total Trucking Industry	%
No. Firms	3,008	5.4	52,623	94.6	55,631	100
Equipment operated						
Trucks	18,795	5.8	303,800	94.2	322,595	100
Tractors	31,730	55.1	25,900	44.9	57,630	100
Trailers	78,816	62.7	46,900	37.3	125,716	100
No. Persons employed (Est)	81,000	22.0	287,000	78.0	368,000	100
Fuel Consumed (bill. L)	1.5	31.3	3.3	68.7	4.8	100
Fuel Cost ($bill.)	.6	30.0	1.4	70.0	2.0	100
Vehicle kilometres travelled (bill.)	2.7	29.0	6.6	71.0	9.3	100
Est total operating expenses, ($bill.)	5.4	37.2	9.1	62.8	14.5	100
Fuel cost/km travelled ($)	0.22		0.22		0.22	
Average number of pieces of equipment per firm	43		6.7		9.0	
Average number of employees per firm	33		5.4		6.6	
Average annual operating expense per firm ($'000)	1,795		172		260	

(1) Includes firms with more than 4 vehicles.
(2) Includes firms with more than 4 vehicles, which are involved in the transportation of goods.

Data presented in Table 2 show that the private trucking industry in terms of number of firms in business, equipment operated, fuel consumed and vehicle miles travelled is significantly larger than its for-hire counterpart. The data presented also reveal that the average size of a private trucking firm is significantly smaller than the average for-hire carrier.

V - Analysis of the Relative Importance of For-hire and Private Trucking on the Long Distance Freight Market

A - Input Structure of the Long Distance Freight Carriers

In this section, a comparison of for-hire and private carriers in a competitive context is being developed.

The market studied is the one where medium and large carriers are coexist and compete. The following criteria were used in defining the two groups for comparison.

a) For-hire trucking group of carriers

- More than 50% of the operating revenues were earned on shipments travelling more than 25 km in length.
- Household Goods movers were excluded.
- 15 or more pieces of equipment (trucks, tractors, trailers) were operated by these companies.

b) Private trucking group of carriers.

- More than 50% of trips were made for a distance of more than 24 km.
- The trucking activity of these fleets was related to one or more of the following industries; agriculture, forestry, fishing and trapping, mining, manufacturing, construction, wholesale trade, retail trade and accommodation, food and beverage services.
- 15 or more pieces of equipment were operated by these companies.

For each of these groups comparative data from the Motor Carrier Freight Survey and the Trucking Activity Survey were compiled and analysed. A summary of this analysis is presented in table 3 on pages 12, 13 and 14.

TABLE 3

SELECTED STATISTICS ON LONG DISTANCE

FOR-HIRE AND PRIVATE TRUCKING CARRIERS

	For-hire		Private	
	No.	%	No.	%
1-Number of Carriers	1,128	100%	1,525	100%
2-Region of domicile (number, %)				
Maritimes	92	8%	217	14%
Québec	267	24%	343	23%
Ontario	386	34%	490	32%
West	383	34%	475	31%
3-Number of Province/ Territories Served (number, %)				
one (1)	430	38%	906	59%
two (2)	246	22%	256	17%
three (3)	153	13%	168	11%
four (4)	74	7%	62	4%
more than five (5)	225	20%	133	9%
4-Type of Ownership (number, %)				
Sole owner	23	2%	64	4%
Partnership	15	1%	27	2%
Incorporated	1,079	96%	1,374	90%
Other (e.g. government, etc.)	11	1%	60	4%
5-Equipment				
a) (i) Total number of vehicles operated	111,691	100%	68,058	100%
(ii) average/carrier	99		44	
b) (i) Total Number of vehicles owned	104,180	93%	60,347	89%
(ii) average/carrier	93		40	

TABLE 3 - Continued

	For-hire		Private	
	No.	%	No.	%
c) (i) Total number of vehicles leased	7,511	7%	7,711	11%
(ii) average/carrier	7		5	
d) (i) Number of trucks owned	10,246	9%	33,613	49%
(ii) average/carrier	9		22	
e) (i) Number of trucks leased	284	0%	3,151	5%
(ii) average/carrier	0.3		2	
f) (i) Number of tractors owned	24,420	22%	7,816	11%
(ii) average/carrier	22		5	
g) (i) Number of tractors leased	1,862	2%	1,779	3%
(ii) average/carrier	2		1	
h) (i) Number of trailers owned	69,514	62%	18,918	28%
(ii) average/carrier	62		12	
i) (i) Number of trailers leased	5,365	5%	2,781	4%
(ii) average/carrier	5		2	
j) (i) Breakdown of vehicles by type				
Trucks owned	10,246	9%	33,613	49%
Trucks leased	284	0%	3,151	5%
Tractors owned	24,420	22%	7,816	11%
Tractors leased	1,862	2%	1,779	3%
Trailers owned	69,514	62%	18,918	28%
Trailers leased	5,365	7%	2,781	4%
TOTAL	111,691	100%	68,058	100%

TABLE 3 - Concluded

	For-hire		Private	
	No.	%	No.	%
6-Distance				
a) Total Distance travelled (million km)	3,900	100%	1,900	100%
b) (i) Total Distance (Trucks) (million km)	500	13%	1,100	58%
(ii) Average distance per truck (km)	47,483		29,920	
c) (i) Total Distance (Tractors) (million km)	3,400	87%	790	42%
(ii) Average distance per tractor (km)	129,366		101,075	
7-Fuel				
a) Total Fuel Cost ($ million)	520		350	
b) Fuel Cost/km ($)	0.13		0.18	
8-Average Salary/Driver ($)	27,435		26,065	
9-Maintenance Expenses/ Piece of equipment ($)	4,566		4,848	
10-Brokers' Expenses ($ million)	1,000		140	
11-Rental Cost/Vehicle Rented ($)	9,458		11,107	
12-Insurance and License Costs/Vehicle Owned ($)	1,536		934	
13-Total Operating Expenses ($ billion)	5.3		2.1	
14-Total Operating Expenses/Piece of Equipment ($)	47,452		30,856	

Number of Carriers

There were 1025 for-hire carriers and 2,822 private trucking fleets corresponding to the above-mentioned criteria. The disproportion between those two numbers is, at the same time, impressive and misleading. The fact that private trucking fleets serve generally one main "customer" while for-hire carriers provide services to several clients gives a reason for this situation.

It can also be observed that these 1,025 for-hire carriers represent 34% of the 3,008 carriers operating more than 4 vehicles. The same comparison shows that the 2,822 private long freight carriers represent only 5% of the 52,623 private operators of more than 4 vehicles. These numbers demonstrate how private carriers are much more concentrated in short distance hauling than for-hire carriers.

Province/Territory of Domicile

The distribution of for-hire and private carriers among their respective province/territory of domicile is more or less comparable except in the Maritimes. There are only 80 (8%) for-hire carriers domiciled in this region as opposed to 446 (16%) private carriers.

Number of Provinces/Territories Served

Most of the private carriers (72%) operate in only one province or territory and 13% of them serve two provinces. The distance of the majority of the hauls of that group is therefore expected to be relatively limited. The percentage of for-hire carriers operating in only one province or territory is much lower (45%). Also, 31% of for-hire carriers report activities in three or more provinces compared to only 15% of the private fleets. These numbers show that the area of operation of for-hire carriers is globally larger than that of private truckers.

Type of Ownership

The majority of both the for-hire carriers and private carriers studied are incorporated or related to a corporation. It is surprising to notice that 11% of the private carriers operating more than 14 pieces of equipment are owned by a sole owner.

Total Number of Vehicles Operated

The number of vehicles operated by for-hire carriers is much larger than the number of vehicles operated by private carriers. This fact is particularly highlighted when considering the average number of vehicles per company/fleet. These numbers confirm a main difference between the two types of trucking. For-hire truckers must have the equipment to satisfy the various needs of a

number of clients while the private truckers often carry a very limited number of different commodities for a very limited number of clients.

Number of Straight Trucks Owned and Leased

On average, private carriers own 5 straight trucks more than the corresponding for-hire carriers. Leasing of trucks is not a popular alternative in either case. It should be noted, however, that private carriers using leased equipment only are not included in the Trucking Activity Survey because they could not be identified through motor vehicle registrations files which were used to develop the survey universe.

Number of Tractors Owned and Leased

There is an important difference between for-hire carriers and private carriers concerning the number of tractors. On average, for-hire carriers own over 8 times more tractors than do private truckers. Furthermore, for-hire carriers own many more tractors than straight trucks while it is the contrary for private carriers. Finally, few tractors are leased by for-hire carriers (7% of the total numbers of tractors on average), while in the private trucking industry leased tractors represent 16% of the total.

Number of Trailers Owned and Leased

As a consequence of the tractor situation, for-hire carriers own 12 times more trailers than private carriers. Approximately 8% of for-hire trucker's trailers were leased while this percentage was 13% in the private trucking case. For-hire companies operate 2.7 trailers per tractor and private fleets use 1.9 trailers per tractor.

Number of Vehicles Owned and Leased

Approximately 7.5% of vehicles operated by for-hire carriers are leased, the corresponding number for private truckers is 10.4%.

Classification of Vehicles by Type

This statistic shows the difference in the nature of the fleet between the two groups of carriers. The main components of those of for-hire truckers are tractors and trailers. Private carriers use straight trucks predominantly. This difference in equipment implies a possible difference in the volume of loads carried and the distance travelled.

Total Distance Travelled

In total, private carriers have travelled 2.4 billion kilometres and for-hire carriers, 2.1 billion kilometres; a difference of close to 14%.

Distance Travelled by Trucks and Tractors (excluding broker operators)

In total, straight trucks used by private carriers covered much more distance than the for-hire ones. This situation is reversed when considering tractors. This is supported by each group fleet structure as discussed previously. However, on average, trucks and tractors operated by private carriers travel more annually than those operated by for-hire carriers. Therefore, under the criterion of average annual distance travelled, on an equipment to equipment comparison, private carriers utilize their equipment more intensively than for-hire carriers.

Fuel Costs

For-hire and private carriers have respectively spent $410 and $420 billions on fuel. For-hire carriers spent $0.02 more per kilometre than private carriers. This $0.02 difference could be explained by the fact that for-hire carriers use more tractors and trailers and therefore probably carry heavier loads.

Average Salary/Driver

The average salary of drivers employed by for-hire carriers is 6% higher than the salary of drivers employed by private carriers.

Maintenance Expenses/Piece of Equipment

The amount of maintenance expenses per piece of equipment is close to $4,000 for for-hire carriers and $7,000 for private carriers. Considering the average number of vehicles per carrier, for-hire carriers appear to benefit from an economy of scale in comparison with private carriers.

Brokers Expenses

The for-hire truckers studied reported having spent more than six times the amount spent by private carriers for services of broker operators. The lack of data on the nature of this service prevents linkage of this behaviour to a characteristic of one of the two groups.

Rental Costs/Vehicles Rented

The difference between the amount spent for vehicle rentals, on average, by the two groups is judged insignificant.

Insurance and License Costs/Vehicles Owned

On average, for-hire carriers pay close to 60% more on these items than private carriers. A finer breakdown is unavailable in the case of private trucking and therefore the nature of this difference cannot be identified.

Total Operating Expenses per Vehicle

The average cost of operating a for-hire vehicle is about $12,000 higher than the cost of operating a private one. It must be considered, however, that this difference are includes such items as traffic and sales expenses and administration and general office expenses that were not reported or applicable in the case of private carriers. Total operating expenses of long distance for-hire carriers represent 78% of the total operating expenses of for-hire operators of more than 4 vehicles. The same ratio in the private trucking case is 23%. These results confirm the concentration of for-hire carriers in long distance hauling and of private carriers in short distance freight transport.

The analysis of comparative data between for-hire and private long distance carriers shows that proportionally more for-hire carriers are involved in long distance hauling than private carriers. The distribution of these two groups of carriers is relatively the same across the country with the exception of the Maritimes. For-hire carriers use more vehicles in total. They operate mostly

tractors and trailers while private carriers use more straight trucks. The total distance travelled by private carriers is greater than the distance travelled by for-hire carriers. On average, they utilize their straight trucks and tractors more than do for-hire carriers.

Long distance for-hire carriers pay higher fuel cost per kilometre, driver salaries, brokers expenses and administrative expenses and therefore have higher operating costs than private carriers. Even when deducting brokers costs, the ratio of operating expenses to total distance travelled is two times larger for for-hire than for private carriers. It should however be noted that certain operating expenses such as salaries of executive officers may not be included in the operating expenses of private truckers which may make this comparison somewhat misleading.

8 Output Characteristics of Long Distance Freight Carriers

Data presented and analysed in the previous sections of this paper were based on trucking surveys whose principal objective was to develop statistics on the structure of the firms in terms of fleet composition, operating costs, employment, etc. In this section, an attempt is made, based on results from commodity origin-destination surveys of Statistics Canada, to describe the output of the industry in terms of tonnes transported, commodities carried and tonnes-kilometres performed.

The data used for the for-hire carriers originate from the 1982 For-hire Trucking Survey and correspond to all intercity carriers having earned more than $100,000 from intercity trucking in 1981 no matter how many vehicles they used. The data used for the private carriers are preliminary data from the 1983 Trucking Activity Survey which measure the commodity origin and destination movements of large private carriers.

a) Major Origin-Destination Pairs (tonnage)

Table 4 provides the ten major origin-destination pairs ranked by the tonnage carried for the two groups studied. Three things are particularly noticeable: the same origin-destination pairs are in both groups but not in the same order; intra-provincial movements are predominant; tonnages carried by for-hire carriers are much higher than tonnages carried by private carriers.

TABLE 4

TEN MAJOR ORIGIN-DESTINATION PAIRS
IN ORDER OF TONNAGE CARRIED

For-hire		Private	
Origin-Destination Rank	Tonnes ('000)	Origin-Destination Rank	Tonnes ('000)
1-Ontario-Ontario	46,176	Ontario-Ontario	15,630
2-Quebec-Quebec	22,157	Quebec-Quebec	13,382
3-Alberta-Alberta	19,908	B.C.-B.C.	2,234
4-B.C.-B.C.	14,227	Alberta-Alberta	2,076
5-Saskatchewan-Saskatchewan	4,751	Saskatchewan-Saskatchewan	1,574
6-Manitoba-Manitoba	3,618	Ontario-Quebec	1,567
7-N.S.-N.S.	3,379	Quebec-Ontario	1,563
8-Ontario-Quebec	3,109	N.S.-N.S.	1,539
9-N.B.-N.B.	3,013	N.B.-N.B.	1,027
10-Quebec-Ontario	2,944	Manitoba-Manitoba	861
TOTAL	123,282		40,853

b) Major Origin-Destination Pairs (tonne-kilometres)

Table 5 provides the ten major origin-destination pairs ranked by the tonne-kilometres performed. On the basis of that criterion for-hire carriers are heavily involved in intraprovincial movements but also perform considerable amount of interprovincial movements. The predominance of intraprovincial movements is noticeable on the private side. Again, the total freight carried by for-hire carriers is greater than the freight carried by private carriers.

c) Major Commodities Carried (tonnage)

As presented in Table 6, out of the first five major commodities carried in terms of tonnage, three are in both groups. Only one commodity in each group does not appear in the high ranks of the other list. This comparison shows that both groups of carriers carry, in general, the same types of commodities.

d) Major Commodities Carried (tonne-kilometres)

Table 7 shows the five major commodities carried by each group in terms of tonne-kilometres. The observations made in point (c) are still valid. The difference in volumes carried, as noticed previously, remains.

TABLE 5

TEN MAJOR ORIGIN-DESTINATION PAIRS IN ORDER OF TONNE-KILOMETRES CARRIED

For-hire		Private	
Origin-Destination Rank	t-km ('000)	Origin-Destination Rank	t-km ('000)
1-Ontario-Ontario	7,082,575	Ontario-Ontario	2,576,011
2-Quebec-Quebec	3,561,221	Quebec-Quebec	2,265,050
3-Alberta-Alberta	3,479,485	Ontario-Quebec	622,598
4-B.C.-B.C.	2,169,648	Quebec-Ontario	517,886
5-Ontario-Quebec	1,851,937	Alberta-Alberta	427,745
6-Quebec-Ontario	1,555,410	Saskatchewan-Saskatchewan	415,772
7-Ontario-Alberta	1,303,483	B.C.-B.C.	306,925
8-Alberta-B.C.	1,110,091	N.S.-N.S.	237,051
9-B.C.-Alberta	1,078,241	N.B.-N.B.	165,598
10-Ontario-B.C.	1,017,941	Manitoba-Manitoba	162,525
TOTAL	24,210,232		7,697,161

TABLE 6

FIVE MAJOR COMMODITIES CARRIED IN ORDER OF TONNAGE

For-hire			Private		
Commodity Rank	Tonnes ('000)	Private trucking ranking	Commodity Rank	Tonnes ('000)	For-hire trucking ranking
1-Sand, gravel and crude stone	9,996	9	1-Petroleum and Coal Products	9,889	5
2-Cement and concrete basic products	4,930	4	2-Other food preparation	4,377	4
3-Fuel oil	4,876	not in first 20	3-Lumber and sawn timber	2,567	10
4-Other food preparations	4,269	2	4-Cement and concrete basic products	2,363	2
5-Petroleum and Coal products	4,049	1	5-Fermented alcoholic beverages	1,812	not in first 20

TABLE 7

FIVE MAJOR COMMODITIES CARRIED
IN ORDER OF TONNE-KILOMETRES

For-hire			Private		
Commodity Rank	t-km ('000)	Private trucking ranking	Commodity Rank	t-km ('000)	For-hire trucking ranking
1-Other food preparation	2,523,551	3	1-Petroleum and coal products	1,299,141	4
2-Lumber and sawn timber	1,479,044	2	2-Lumber and sawn timber	845,333	2
3-Plate, sheet and strip steel	1,199,399	5	3-Other food preparation	725,838	1
4-Petroleum and coal products	1,045,080	1	4-General freight	629,027	15
5-Cement and concrete basic products	1,013,513	11	5-Plate, sheet and strip steel	551,871	3

TABLE 8

NUMBER OF TRIPS OR SHIPMENTS
BY GROUPS OF DISTANCE

	For-hire		Private	
Distance of trip or shipment (km)	Number of Shipments	%	Number of Trips	%
0-100	5,948,765	21.4	1,150,403	48.4
100-500	12,476,577	44.4	1,042,212	43.9
more than 500	9,687,507	34.5	182,507	7.7
Total	28,112,849	100.0	2,374,762	100.0

e) Number of Trips or Shipments by Groups of Distance

The data shown in Table 8 give an indication of the general distance travelled during one commodity movement. Data available describe the movements of for-hire carriers in shipments and of private carriers in trips. The concepts of shipment and trip are not directly comparable. It is often the case for example that a trip would consist of several shipments. Therefore comparing the number of shipments with the number of trips is believed to be misleading. However, it can be seen that the majority of the movements of private carriers are within a distance of 500 kilometres. The distribution of for-hire shipments is less skewed within the distance groups. More than a third of the shipments of that group covered distances of more than 500 kilometres.

Tables 4 to 8 show that for-hire and private carriers operate mainly in the same areas of the country. However, for-hire carriers are more involved in interprovincial movements and carry a larger volume of goods. There are no signs that one group of carriers is specialized in the transportation of a particular commodity over the other. In general, private carriers are involved in short and medium distance movement. For-hire carriers' shipments are of all distances with a third of them travelling over 500 kilometres.

VI - Conclusions

In tnis paper the authors have provided an indication of the importance of the trucking industry within the freight transportation sector in Canada, and described statistically the trucking industry both for-hire and private.

The main conclusions of this study are the following:

. In terms of operating expenses the trucking industry is the major mode of freight transportation in Canada representing 58% of the total freight transport expenses in 1982. Annual expenditures on freight transportation by trucks amounts to approximately $15 billion.

. Private trucking is larger than for-hire trucking in terms of number of carriers, total number of pieces of equipment, total distance travelled, total number of employees and total operating expenses.

. The average for-hire carrier is larger than the average private carrier in terms of every variable mentioned above. In terms of operating expenses, the average for-hire carrier is ten (10) times as large as the average private carrier.

. There are proportionally more long distance for-hire carriers than private carriers. The vast majority of private carriers are predominantly involved in local transportation.

. Long distance for-hire and private carriers are more or less domiciled in the same areas of the country and carry about the same type of commodities.

. Long distance private carriers use mostly straight trucks. They appear to be predominantly involved in intraprovincial, relatively short distance movements. On average their trucks and tractors travel more annually than those operated by long distance for-hire carriers.

. Long distance for-hire carriers use mostly tractors and trailers. They are more involved in interprovincial movements than private carriers. They carry larger volumes of commodities over longer distances.

. In total, long distance for-hire and private carriers covered comparative distances as measured by total vehicle kilometres travelled. However, for-hire carriers transported a much greater capacity of freight as measured either in tonnes or in tonne-kilometres. There are two factors which may explain this paradox: the predominant use of straight trucks by private carriers implies a smaller load by kilometre driven than for-hire carriers who use more tractor-trailers combina-

tions; private carriers have more empty back-hauls than for-hire carriers. In either cases more detailed origin-destination data for private trucking movements would be required to substantiate these affirmations.

FURTHER RESEARCH

Based on the findings of the study and the experience gained during the research phase, the authors feel that further research is required in the following areas:

(1) Development of better statistical criteria to be used for distinguishing between for-hire and private carriers. As the clear distinction between the two is becoming blurred, an integrated statistical approach is becoming essential.

(2) Development of a better and more integrated data base relating to both the input characteristics of carriers (e.g. fuel, labour, etc.) and the output characteristics of the same carriers (e.g. tonnes carried and tonne-kilometres performed).

(3) Better measurement and analysis of the traffic carried by broker operators, on behalf of carriers. The relationship between broker transported traffic and traffic carried by company owned vehicles will have to be identified, measured and analysed.

RECOMMENDATIONS

Future survey taking activities should take into account the changing nature of the trucking industry and, in the long run, all trucking related surveys should use common frameworks, definitions and concepts.

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